SOLAR OBSERVATIONS.

SOLAR AND SKY RADIATION MEASUREMENTS DURING FEBRUARY, 1924

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For a description of instruments and exposures and an account of the method of obtaining and reducing the measurements, the reader is referred to the REVIEW for January, 1924, **53**: 42.

At Washington, normals of total solar and sky radiation on a horizontal surface in use up to the end of 1923 included values obtained at Central Office from July, 1909, to April, 1912, and Mount Weather, Va., from May, 1913, to October, 1914, inclusive. Normals of solar radiation at normal incidence for the same period included observations taken intermittently at Central Office from June, 1905 to 1913. New normals made up for both the total solar and sky radiation on a horizontal surface and radiation at normal incidence which include only values obtained at the American University since the opening of that station in October, 1914, have been substituted beginning with January, 1924.

From Table 1 it is seen that solar-radiation intensities averaged below normal values for February at all the stations.

Table 2 shows that the total solar and sky radiation received on a horizontal surface averaged slightly above the normal at Washington and below the normal at Madison, and Lincoln.

Skylight polarization measurements obtained at Washington on three days give a mean of 55 per cent, with a maximum of 65 per cent on the 16th. These are close to average values for February. At Madison no measurements were obtained, as the ground was covered with snow throughout the entire month.

TABLE 1.—*Solar radiation intensities during February, 1924*

[Gram-calories per minute per square centimeter of normal surface]

Washington, D. C.

Date	8 a. m.	Sun's zenith distance									Noon
		78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	
	75th mer. time	Air mass									Local mean solar time
		A. M.					P. M.				
	e	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0	e
1924	*mm.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mm.*
Feb. 2	3.63	0.39	0.43	0.55	0.85	.....	0.86	0.43	.....	.....	3.63
7	2.16	0.55	0.64	0.78	0.95	.....	.....	.....	.....	.....	2.62
9	1.88	.....	1.07	1.19	1.34	1.49	1.20	1.00	0.83	0.69	1.88
11	2.36	0.84	0.96	1.11	1.28	1.48	.....	.....	.....	.....	1.60
12	3.63	0.74	0.84	.....	1.15	.....	.....	.....	.....	.....	3.30
13	2.74	.....	0.67	.....	.....	.....	.....	.....	.....	.....	1.96
15	2.87	0.75	0.86	1.02	.....	.....	.....	.....	.....	.....	2.36
16	1.78	.....	1.06	1.20	1.35	1.48	.....	.....	.....	.....	1.96
20	4.95	.....	.....	.....	.....	.....	1.03	0.66	.....	.....	4.75
21	1.88	0.61	0.72	0.89	1.15	1.45	.....	.....	.....	.....	2.06
28	2.36	0.60	0.72	0.89	1.04	1.21	.....	.....	.....	.....	2.87
Means	.....	**0.64**	**0.80**	**0.95**	**1.14**	.....	**1.03**	**0.70**	**(0.83)**	**(0.69)**	.....
Departures	.....	**−0.09**	**−0.02**	**−0.04**	**−0.03**	.....	**−0.16**	**−0.27**	**−0.01**	**−0.08**	.....

Madison, Wis.

Feb. 11	2.49	.....	.....	.....	1.30	.....	.....	.....	.....	.....	3.99
15	2.87	.....	.....	1.28	1.36	.....	.....	.....	.....	.....	1.32
21	1.19	1.00	1.13	1.22	1.39	1.54	.....	.....	.....	.....	1.45
25	1.37	0.96	1.08	1.17	1.35	1.51	1.33	1.14	.....	.....	2.26
26	1.96	.....	.....	.....	.....	.....	1.22	1.00	.....	.....	2.74
27	2.62	0.83	0.94	1.07	1.21	1.38	1.19	0.94	.....	.....	3.99
Means	.....	**0.93**	**1.05**	**1.18**	**1.32**	.....	**1.25**	**1.03**	.....	.....	.....
Departures	.....	**−0.01**	**−0.07**	**−0.06**	**−0.05**	.....	**−0.12**	**−0.15**	.....	.....	.....

Lincoln, Nebr.

Feb. 2	4.75	0.76	.....	.....	1.33	1.48	1.33	1.20	1.08	0.97	7.87
6	0.86	.....	.....	1.36	1.47	1.59	1.50	.....	.....	.....	1.45
7	1.19	.....	0.96	.....	.....	.....	.....	.....	.....	.....	1.88
11	3.00	.....	.....	1.28	1.44	.....	1.44	.....	.....	.....	3.15
13	4.75	.....	.....	.....	.....	.....	1.21	.....	.....	.....	6.50
21	1.24	.....	.....	.....	1.36	.....	.....	.....	.....	.....	1.88
25	1.37	.....	.....	.....	.....	1.35	1.12	0.94	0.79	0.66	2.74
26	1.52	.....	.....	0.81	1.23	1.38	1.20	1.03	0.89	0.81	3.81
27	2.26	.....	.....	0.82	1.21	1.51	1.33	1.18	1.04	0.97	3.15
28	2.74	.....	.....	.....	.....	.....	1.35	1.12	.....	.....	3.81
29	3.15	0.91	1.03	1.15	1.33	1.53	.....	.....	.....	.....	5.36
Means	.....	**(0.84)**	**(1.00)**	**1.08**	**1.32**	.....	**1.31**	**1.09**	**0.95**	**0.85**	.....
Departures	.....	**−0.12**	**−0.05**	**−0.12**	**−0.07**	.....	**−0.04**	**−0.08**	**−0.08**	**−0.06**	.....

TABLE 2.—*Solar and sky radiation received on a horizontal surface*

Week beginning—	Average daily radiation				Average daily departure for the week			Excess or deficiency since first of year		
	Chicago	Washington	Madison	Lincoln	Washington	Madison	Lincoln	Washington	Madison	Lincoln
1924	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
Jan. 29	69	201	101	198	+4	−99	−18	+311	−541	+107
Feb. 5	94	193	178	335	−23	−39	+69	+151	−816	+588
12	119	262	197	241	+27	−42	−52	+340	−1,109	+223
19	161	291	296	243	+34	+37	−76	+575	−852	−310